FIGURE 1

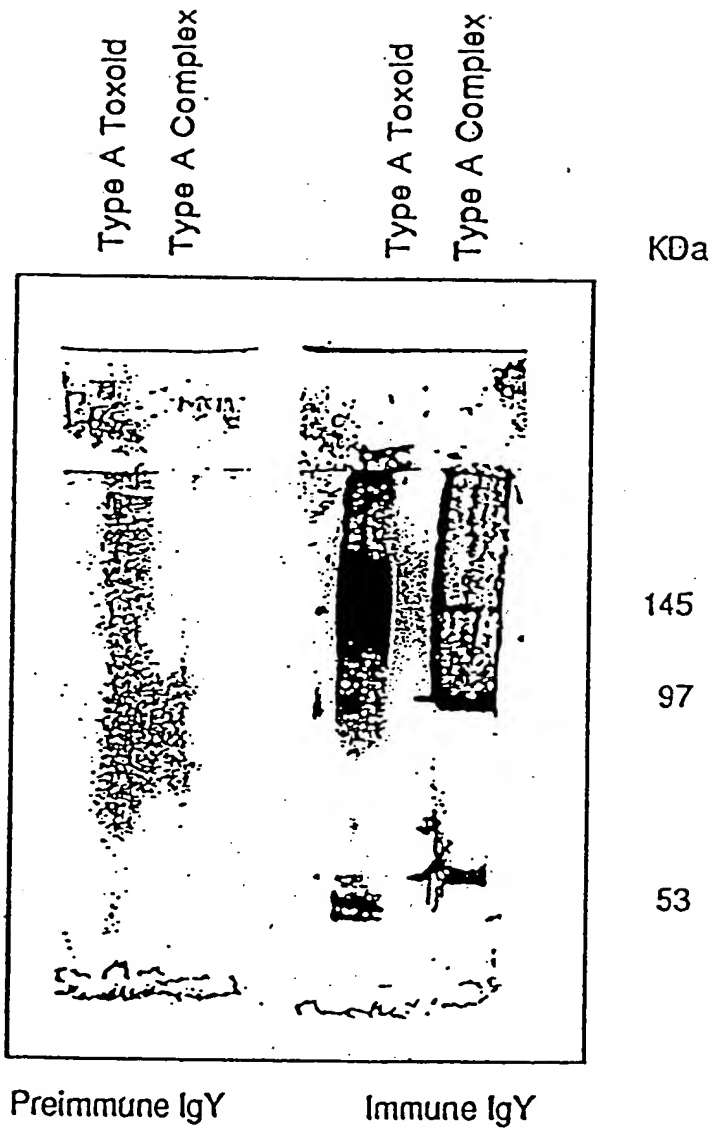

Type A Toxoid
Type A Complex
Type A Toxoid
Type A Complex
KDa
145
97
53
Preimmune IgY
Immune IgY

FIGURE 2

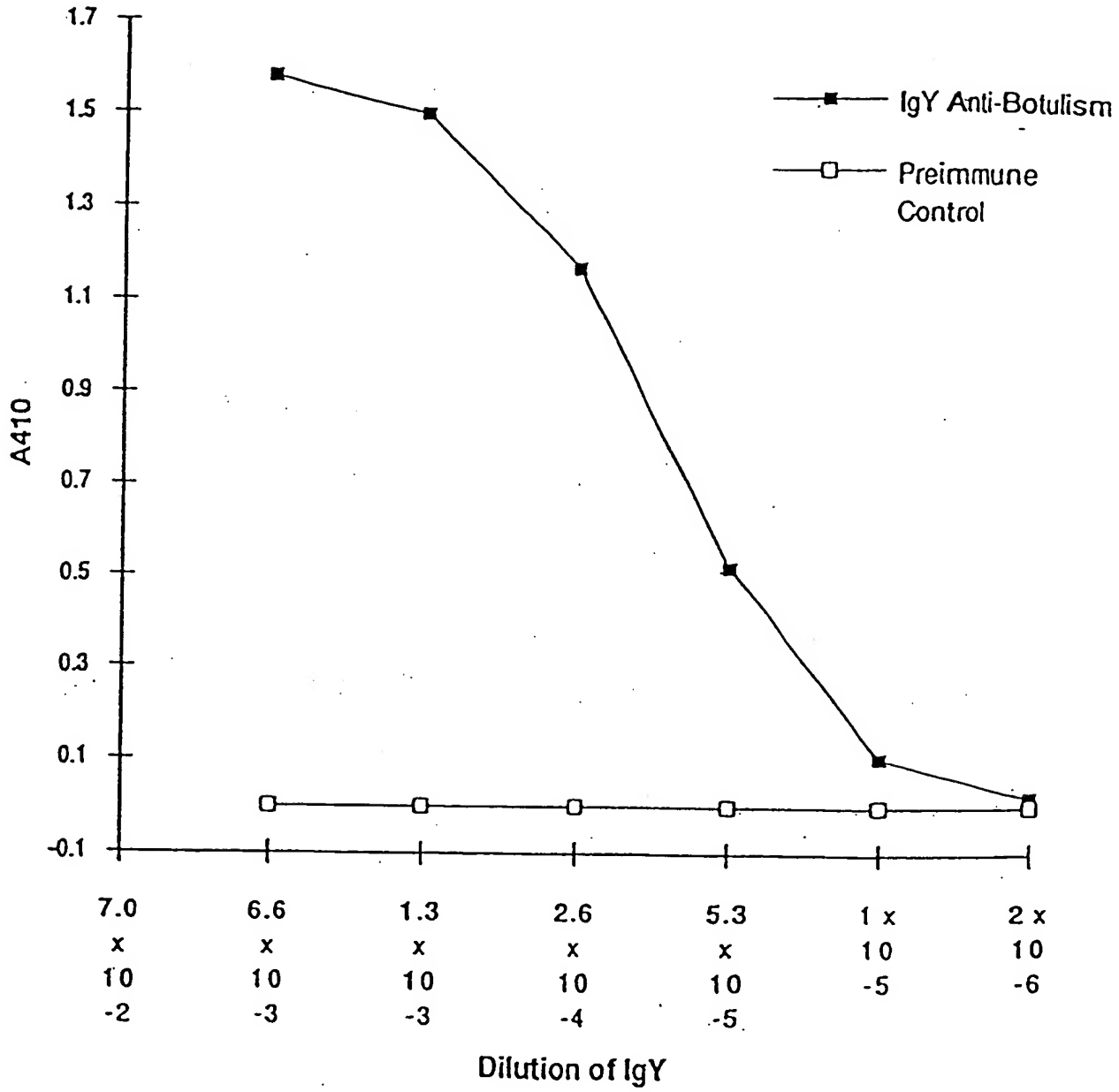

1.7
1.5
1.3
1.1
0.9
0.7
0.5
0.3
0.1
-0.1
A410
IgY Anti-Botulism
Preimmune Control
7.0 x 10 -2
6.6 x 10 -3
1.3 x 10 -3
2.6 x 10 -4
5.3 x 10 -5
1 x 10 -5
2 x 10 -6
Dilution of IgY

FIGURE 3

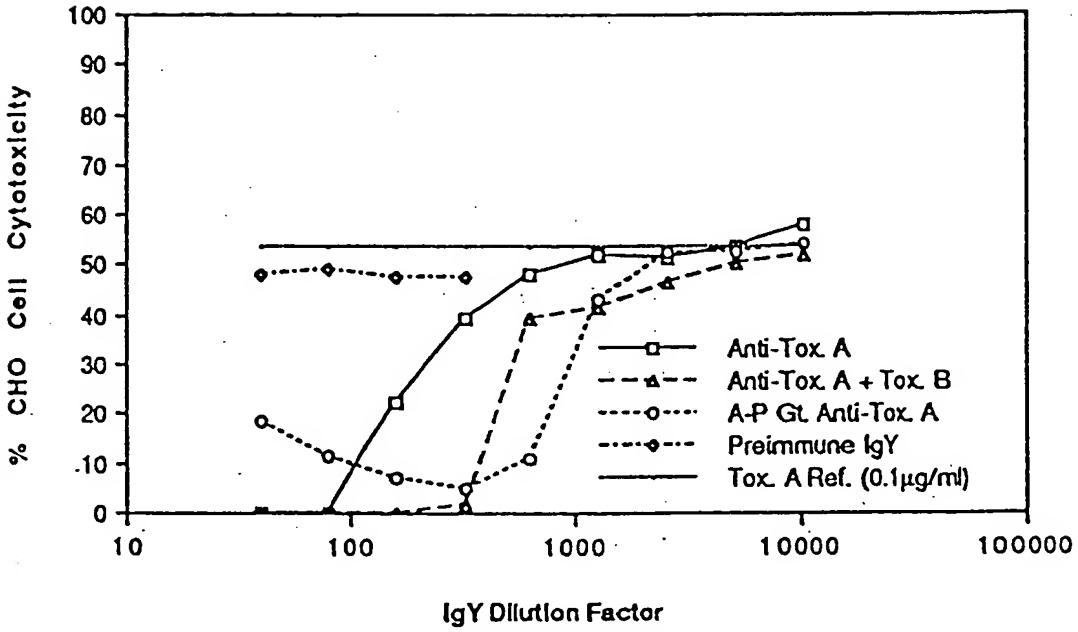

% CHO Cell Cytotoxicity
100
90
80
70
60
50
40
30
20
10
0
10
100
1000
10000
100000
IgY Dilution Factor
Anti-Tox. A
Anti-Tox. A + Tox. B
A-P Gt. Anti-Tox. A
Preimmune IgY
Tox. A Ref. (0.1µg/ml)

FIGURE 4

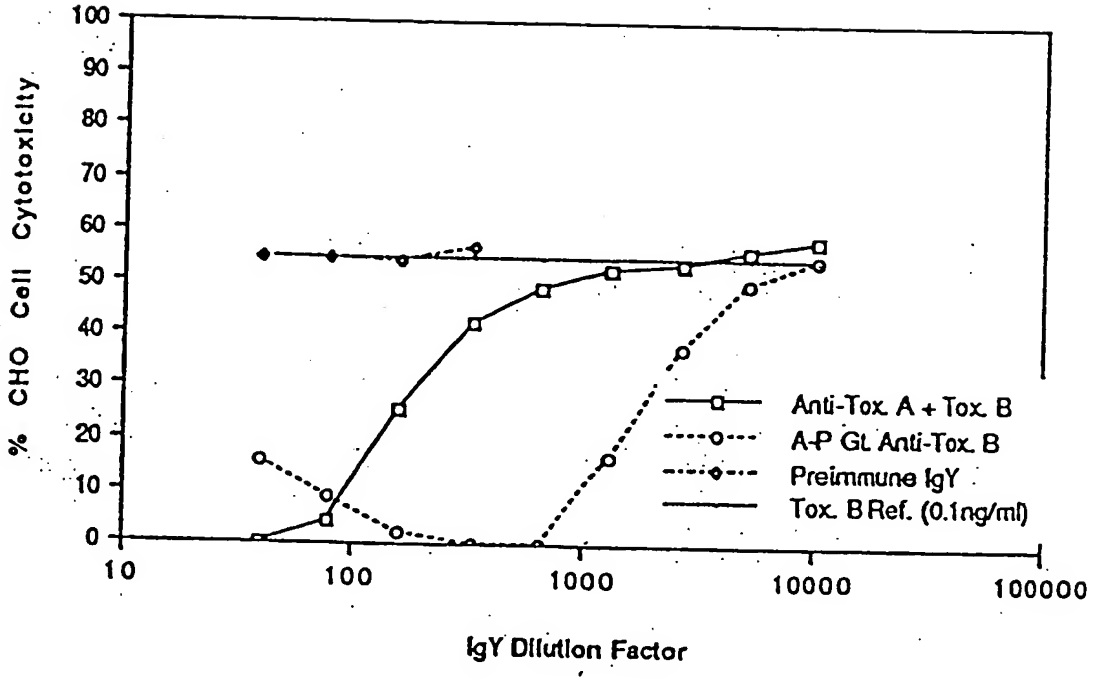

% CHO Cell Cytotoxicity
100
90
80
70
60
50
40
30
20
10
0
10
100
1000
10000
100000
IgY Dilution Factor
Anti-Tox. A + Tox. B
A-P Gt. Anti-Tox. B
Preimmune IgY
Tox. B Ref. (0.1ng/ml)

FIGURE 5

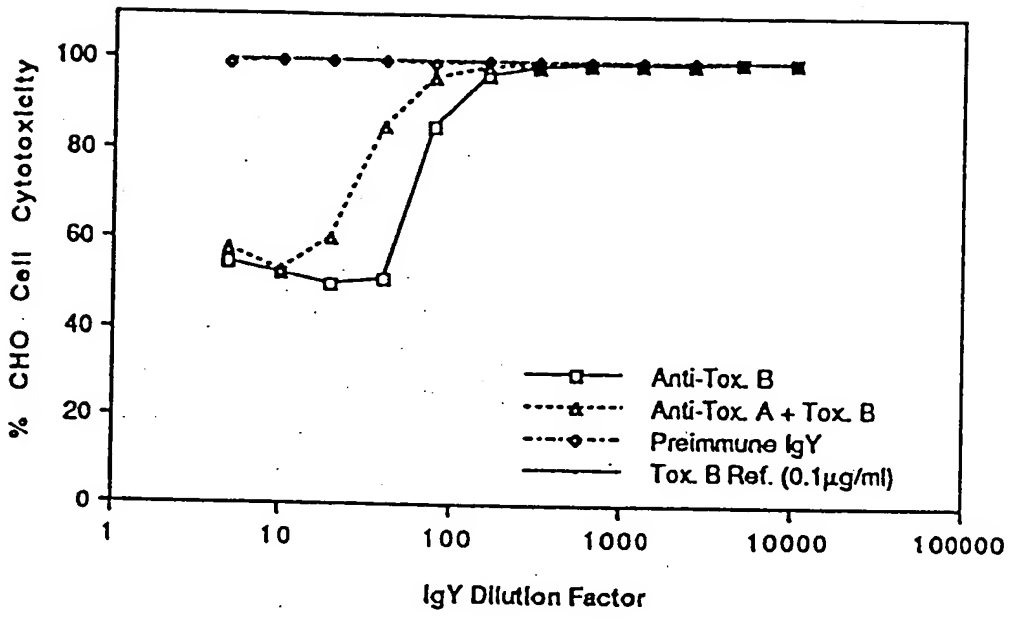
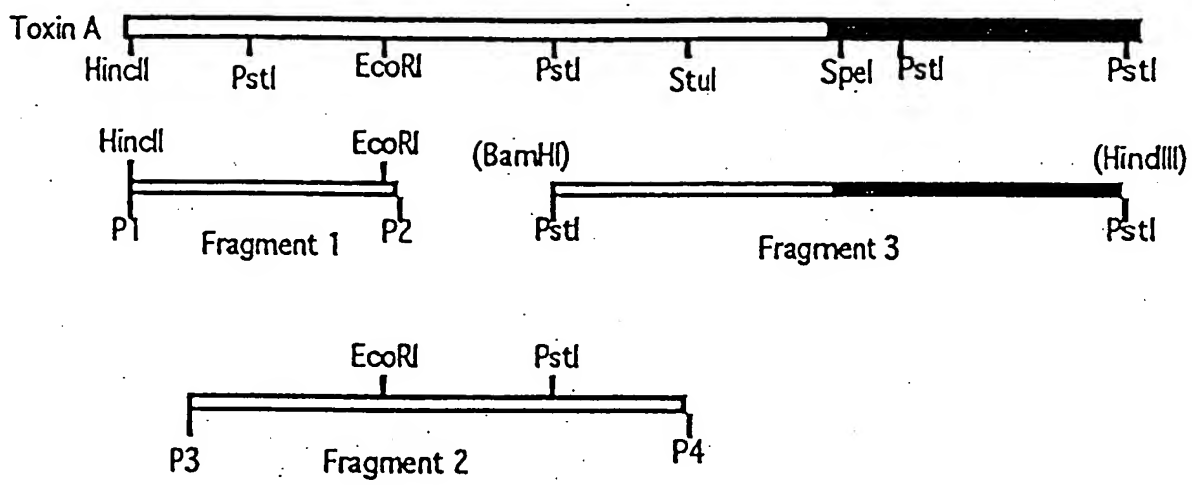

% CHO Cell Cytotoxicity
100
80
60
40
20
0
1
10
100
1000
10000
100000
IgY Dilution Factor
Anti-Tox. B
Anti-Tox. A + Tox. B
Preimmune IgY
Tox. B Ref. (0.1µg/ml)

FIGURE 6



P1-P4 are PCR primers 1-4. P1=5'GGAAATTTAGCTGCAGCATCTGAC3', P2=5'TCTAGCAAATTCGCTTGTGTTGAA3',P3=5'CTCGCATATAGCATTAGACC3', P4=5'CTATCTAGGCCTAAAGTAT3'. Indicated restriction sites in fragments 1 and 2 are internal sites used to clone into pGEX2T vector (fragment 1; construct called pGA30-660) or pMALc vector (fragment 2; construct called pMA660-1100). Bracketed restriction sites at ends of fragment 3 are pUC9 polylinker sites utilized to clone fragment 3 into pET23 vector (construct called pPA1100-2680). Numbers in these constructs refer to toxin A amino acid interval that is expressed. The shaded portion of the toxin A gene corresponds to the repeating ligand binding domain.

FIGURE 7

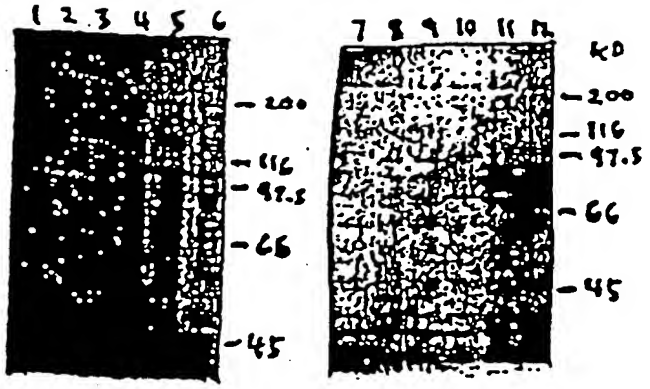
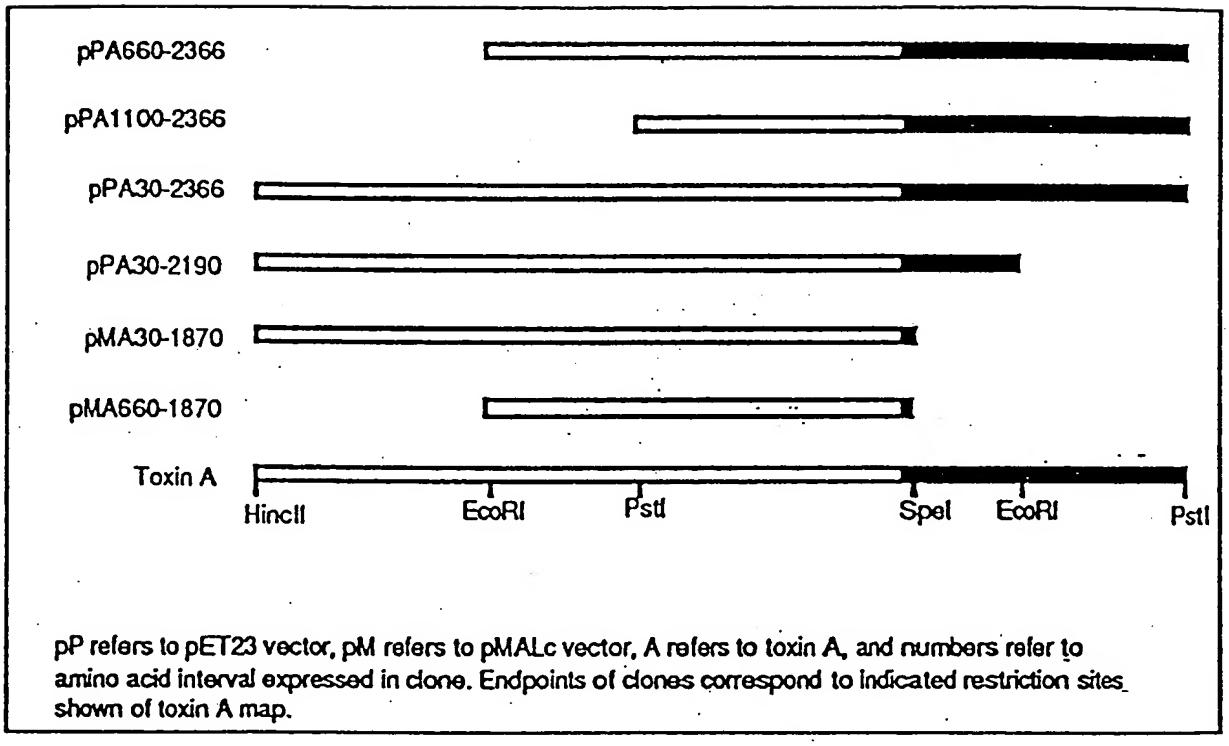
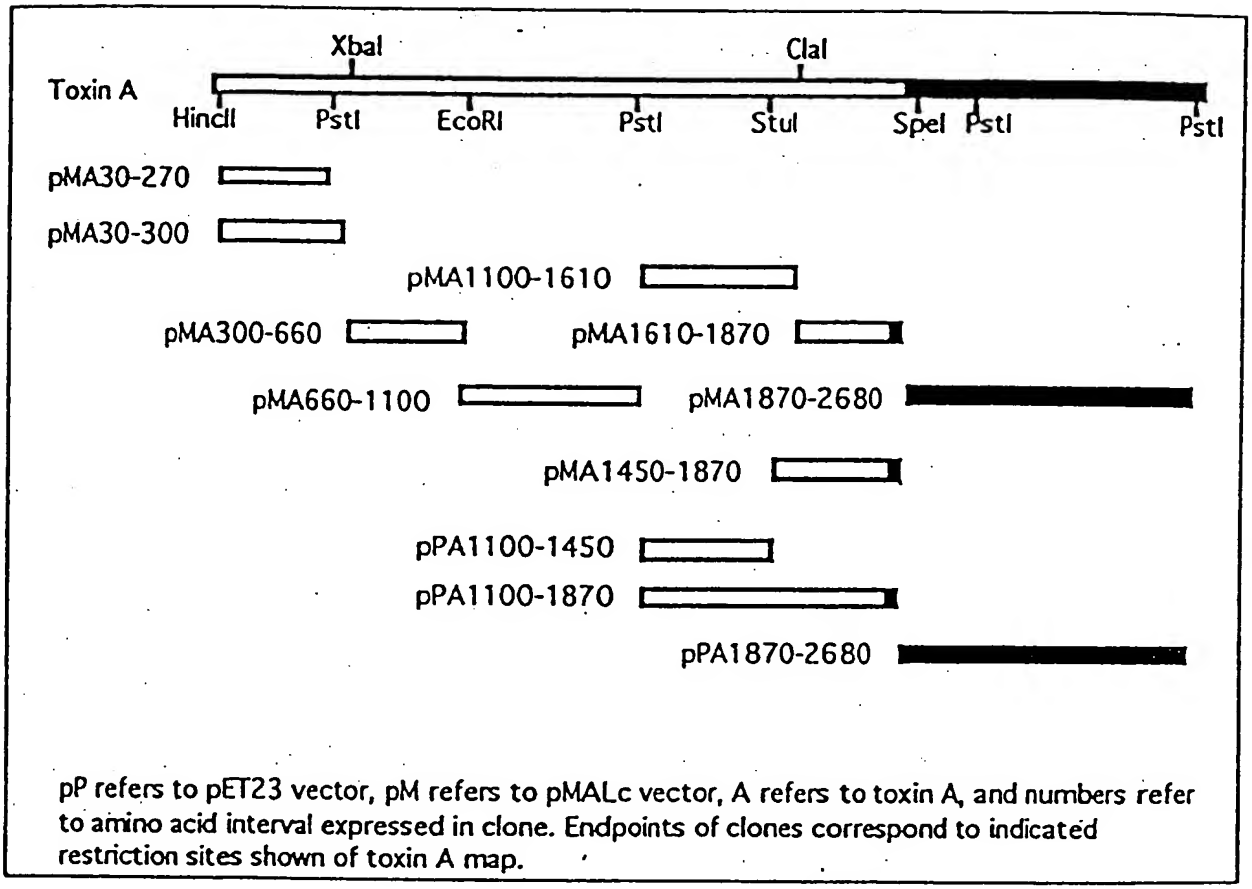


FIGURE 8



pP refers to pET23 vector, pM refers to pMALc vector, A refers to toxin A, and numbers refer to amino acid interval expressed in clone. Endpoints of clones correspond to indicated restriction sites shown of toxin A map.

FIGURE 9



pP refers to pET23 vector, pM refers to pMALc vector, A refers to toxin A, and numbers refer to amino acid interval expressed in clone. Endpoints of clones correspond to indicated restriction sites shown of toxin A map.

FIGURE 10

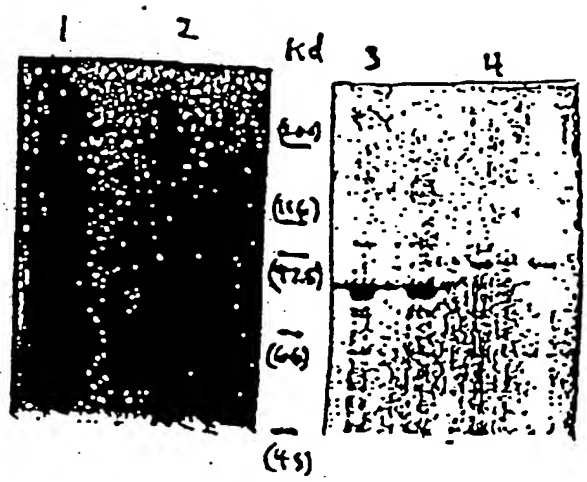


FIGURE 11

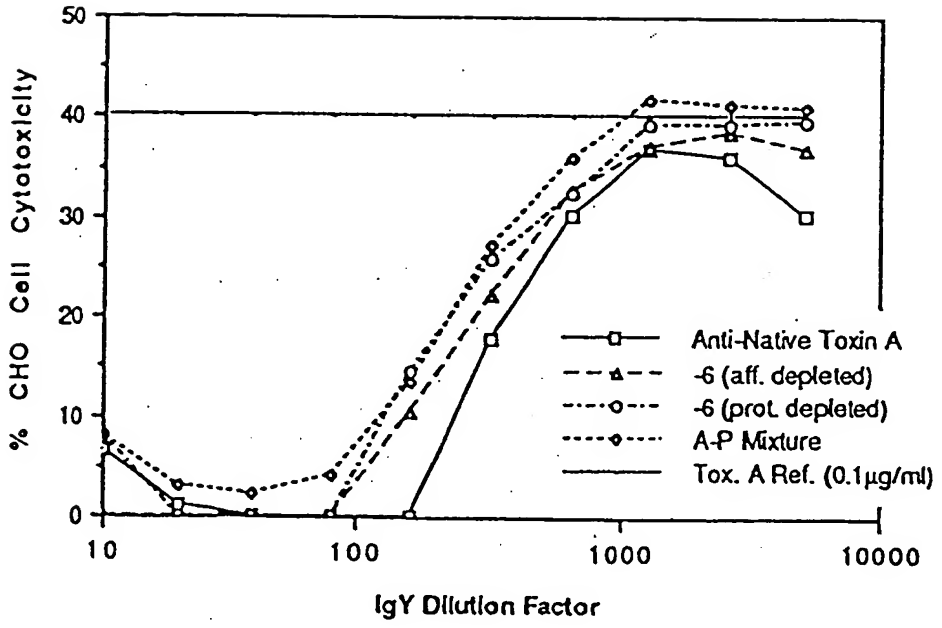

% CHO Cell Cytotoxicity
50
40
30
20
10
0
10
100
1000
10000
IgY Dilution Factor
Anti-Native Toxin A
-6 (aff. depleted)
-6 (prot. depleted)
A-P Mixture
Tox. A Ref. (0.1µg/ml)

FIGURE 12

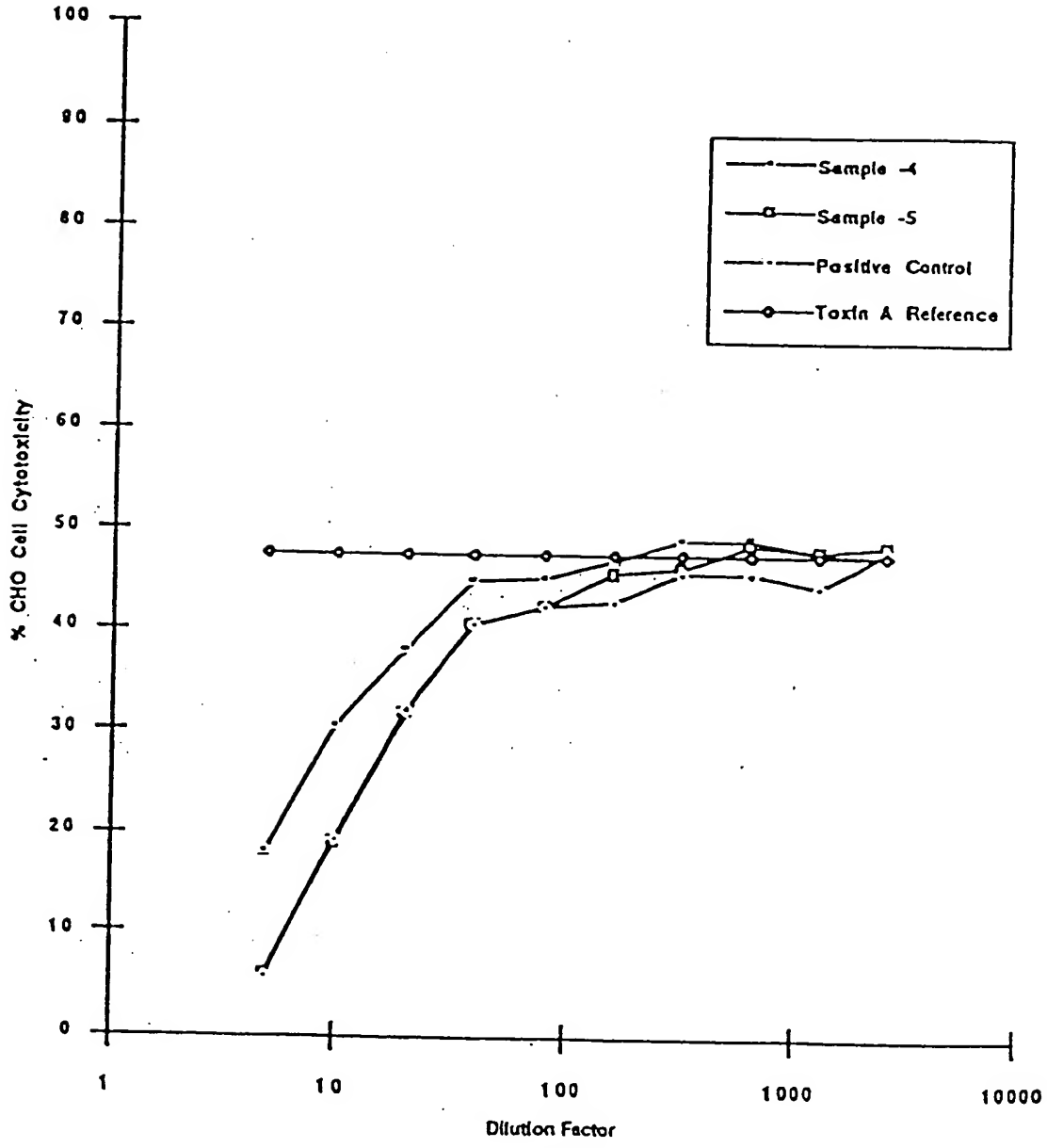

100
90
80
70
60
50
40
30
20
10
0
% CHO Cell Cytotoxicity
1
10
100
1000
10000
Dilution Factor
Sample -4
Sample -5
Positive Control
Toxin A Reference

FIGURE 13

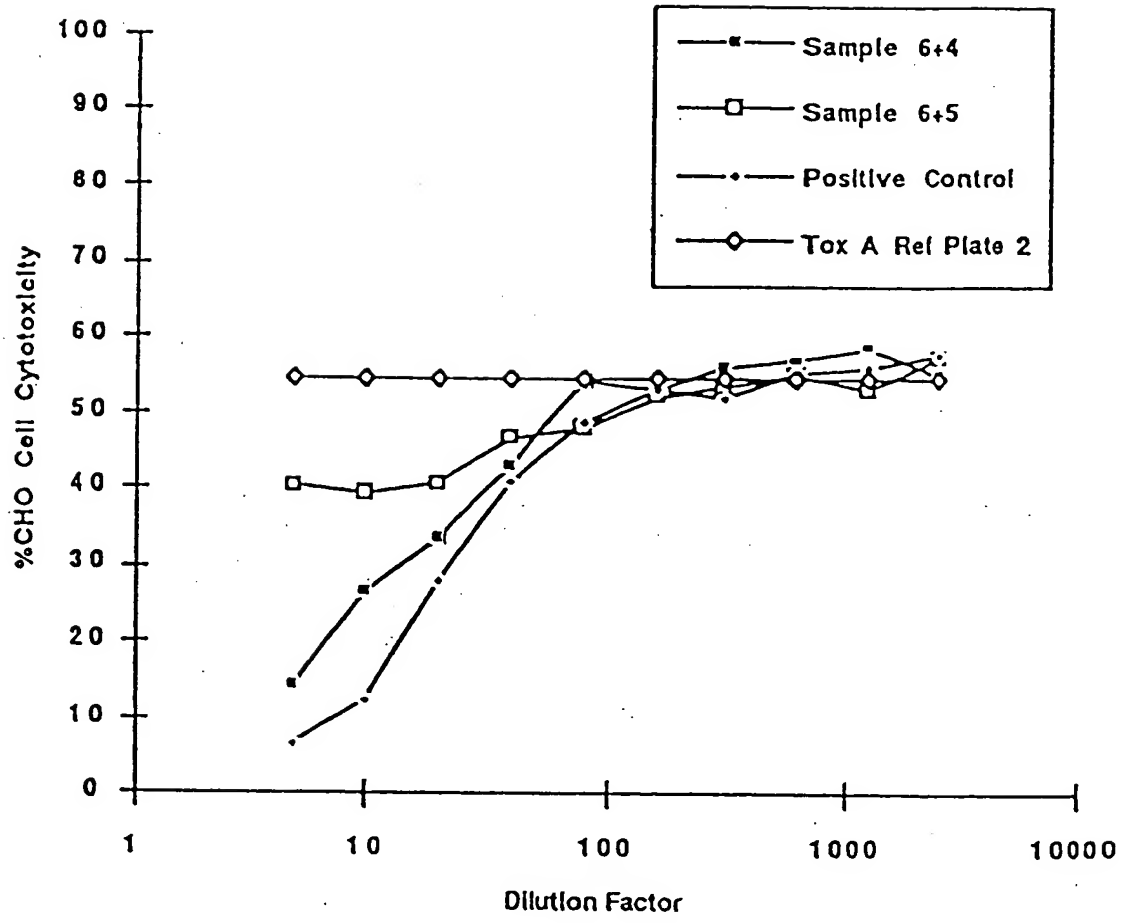

Sample 6+4
Sample 6+5
Positive Control
Tox A Ref Plate 2
%CHO Cell Cytotoxicity
100
90
80
70
60
50
40
30
20
10
0
1
10
100
1000
10000
Dilution Factor

FIGURE 14

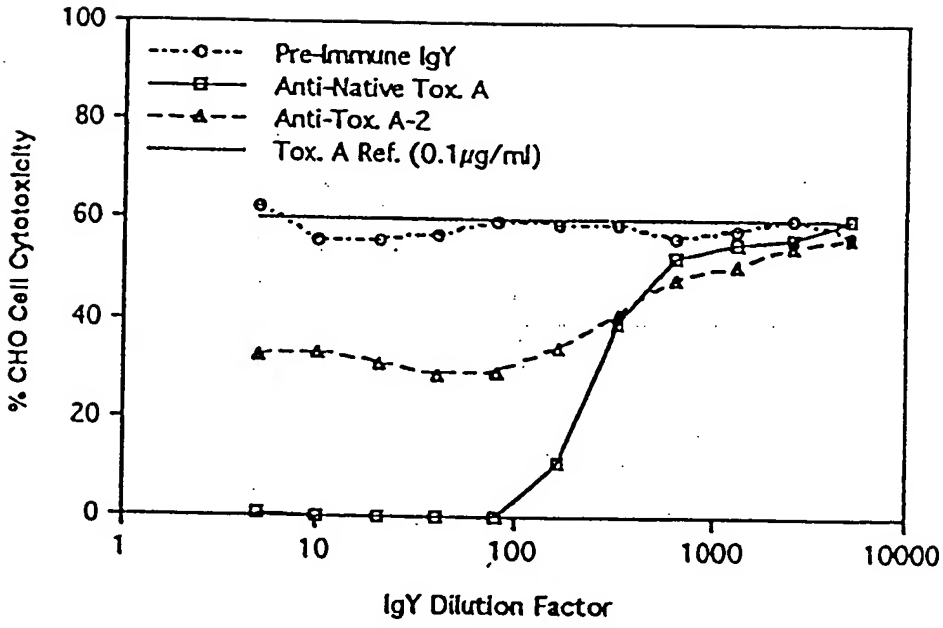

100
80
60
40
20
0
% CHO Cell Cytotoxicity
Pre-Immune IgY
Anti-Native Tox. A
Anti-Tox. A-2
Tox. A Ref. (0.1µg/ml)
1
10
100
1000
10000
IgY Dilution Factor

FIGURE 15

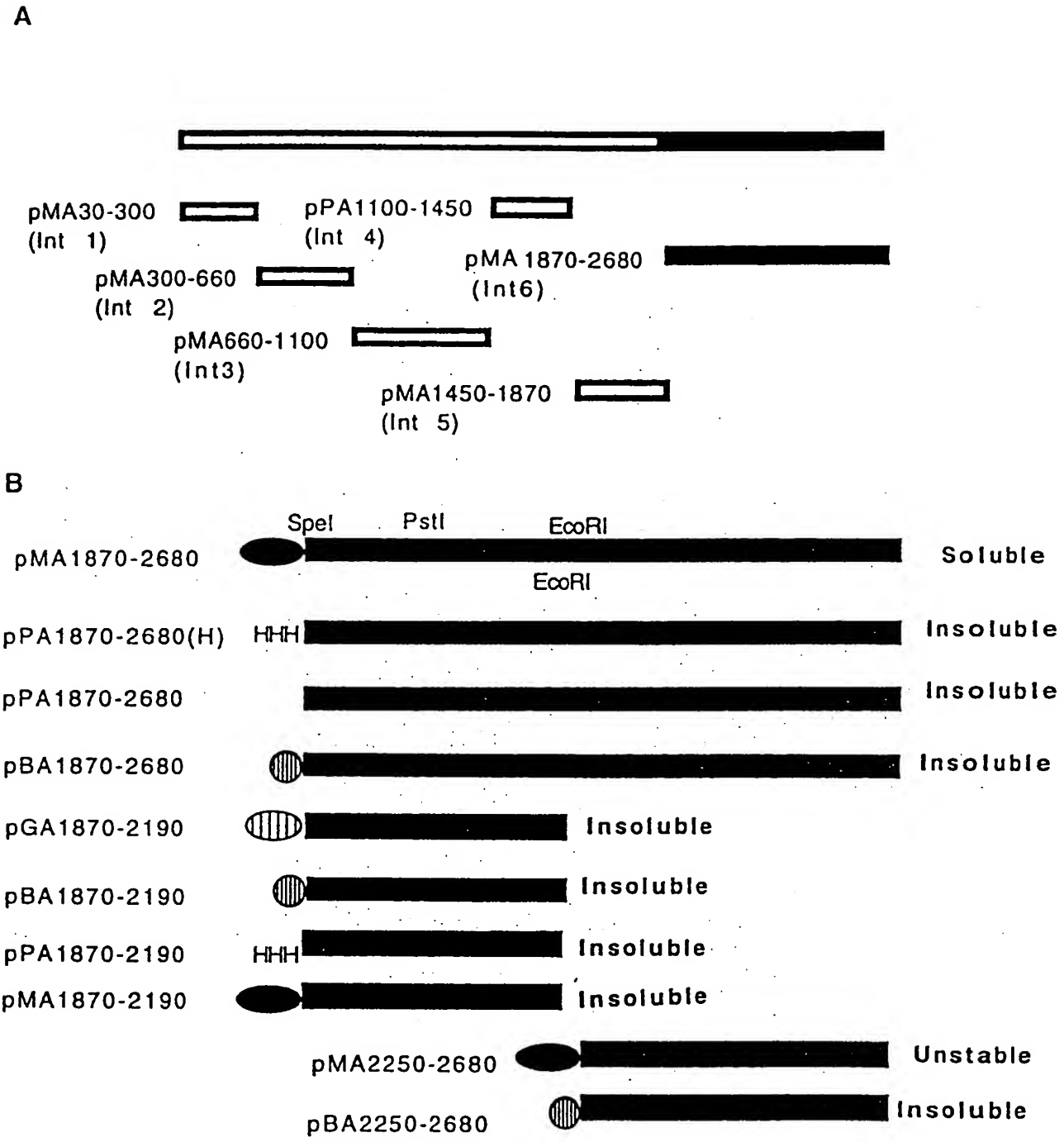

A
pMA30-300
(Int 1)
pPA1100-1450
(Int 4)
pMA 1870-2680
(Int6)
pMA300-660
(Int 2)
pMA660-1100
(Int3)
pMA1450-1870
(Int 5)
B
SpeI
PstI
EcoRI
pMA1870-2680
Soluble
EcoRI
pPA1870-2680(H)
HHH
Insoluble
pPA1870-2680
Insoluble
pBA1870-2680
Insoluble
pGA1870-2190
Insoluble
pBA1870-2190
Insoluble
pPA1870-2190
HHH
Insoluble
pMA1870-2190
Insoluble
pMA2250-2680
Unstable
pBA2250-2680
Insoluble

FIGURE 16

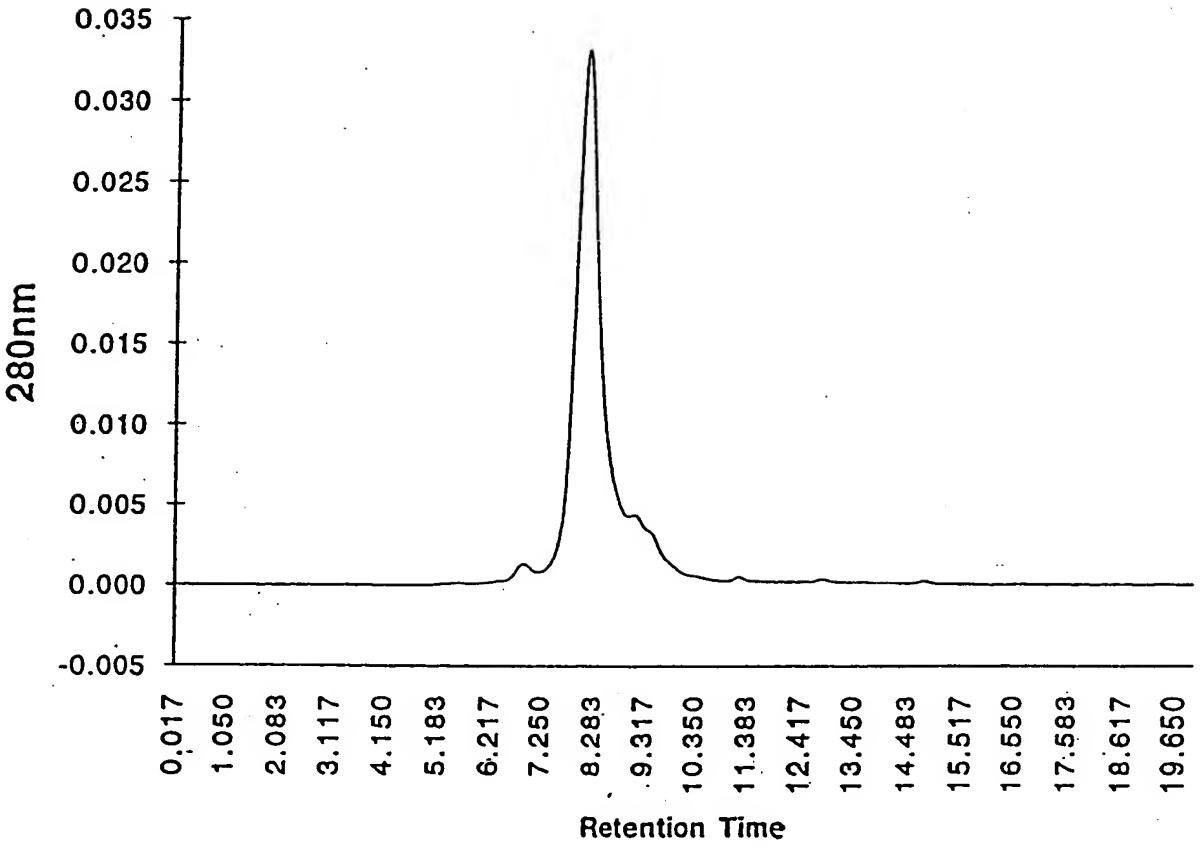

0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
-0.005
280nm
0.017
1.050
2.083
3.117
4.150
5.183
6.217
7.250
8.283
9.317
10.350
11.383
12.417
13.450
14.483
15.517
16.550
17.583
18.617
19.650
Retention Time

FIGURE 17

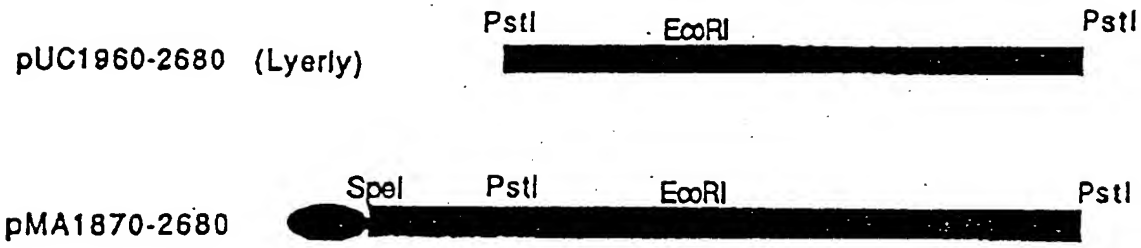

PstI
EcoRI
PstI
pUC1960-2680 (Lyerly)
SpeI
PstI
EcoRI
PstI
pMA1870-2680

FIGURE 18

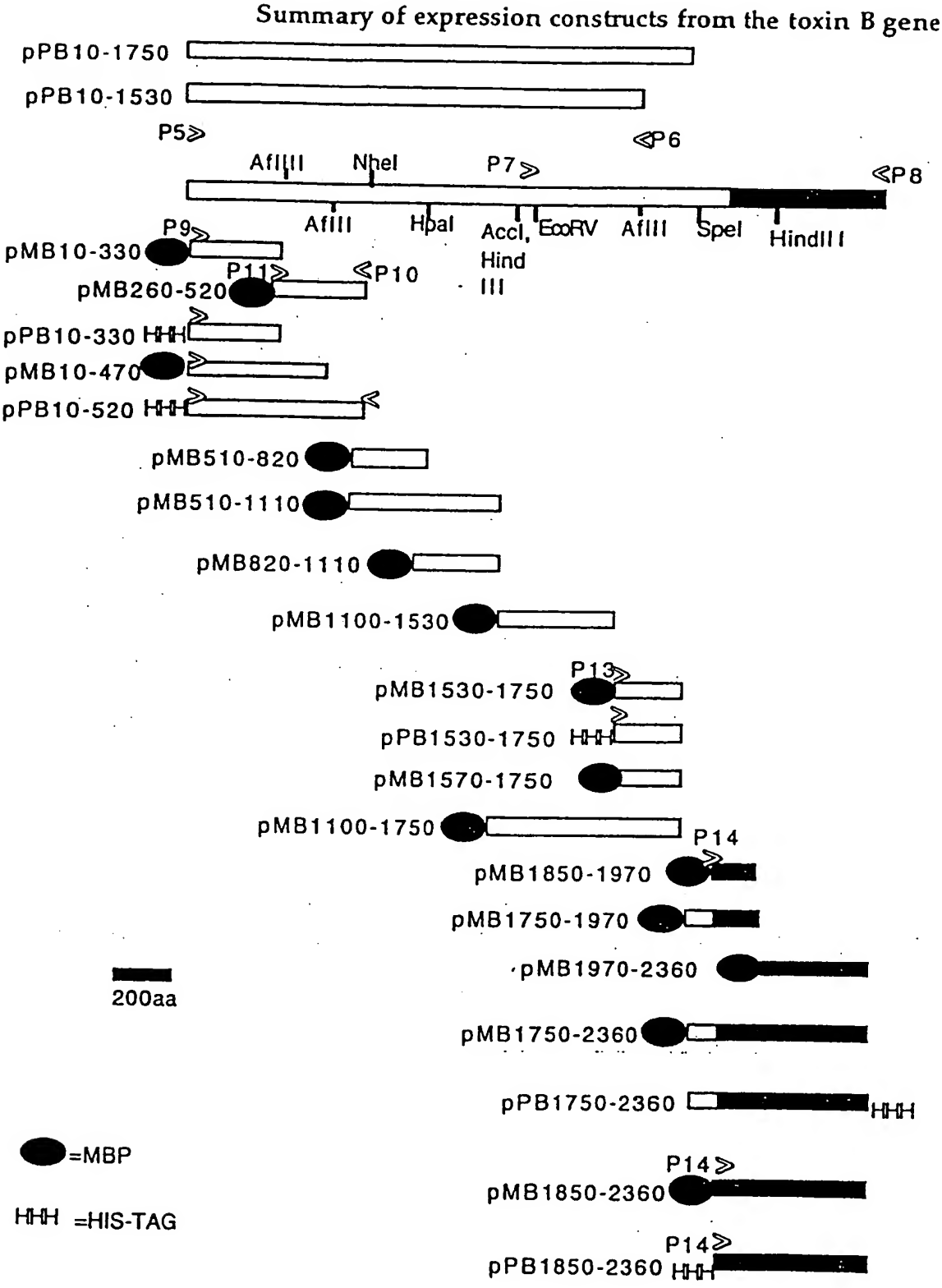

Summary of expression constructs from the toxin B gene
pPB10-1750
pPB10-1530
P5
P6
AflIII
NheI
P7
P8
P9
AflII
HpaI
AccI, Hind III
EcoRV
AflII
SpeI
HindIII
pMB10-330
P11
P10
pMB260-520
pPB10-330 HHH
pMB10-470
pPB10-520 HHH
pMB510-820
pMB510-1110
pMB820-1110
pMB1100-1530
P13
pMB1530-1750
pPB1530-1750 HHH
pMB1570-1750
pMB1100-1750
P14
pMB1850-1970
pMB1750-1970
pMB1970-2360
200aa
pMB1750-2360
pPB1750-2360 HHH
=MBP
HHH =HIS-TAG
P14
pMB1850-2360
P14
pPB1850-2360 HHH

FIGURE 19

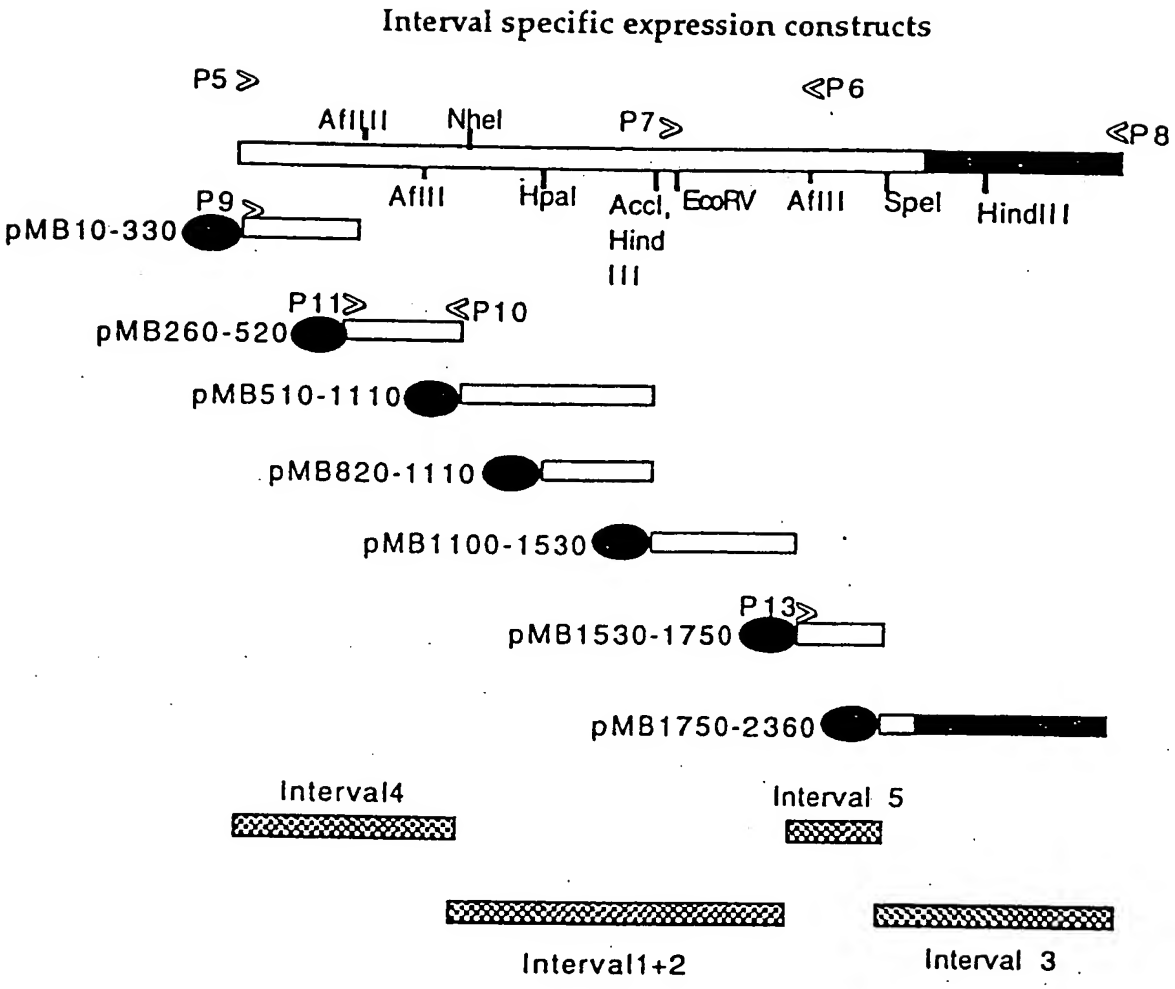

Interval specific expression constructs
P5
P6
AflIII
NheI
P7
P8
AflII
HpaI
AccI, HindIII
EcoRV
AflII
SpeI
HindIII
P9
pMB10-330
P11
P10
pMB260-520
pMB510-1110
pMB820-1110
pMB1100-1530
P13
pMB1530-1750
pMB1750-2360
Interval4
Interval 5
Interval1+2
Interval 3

FIGURE 20

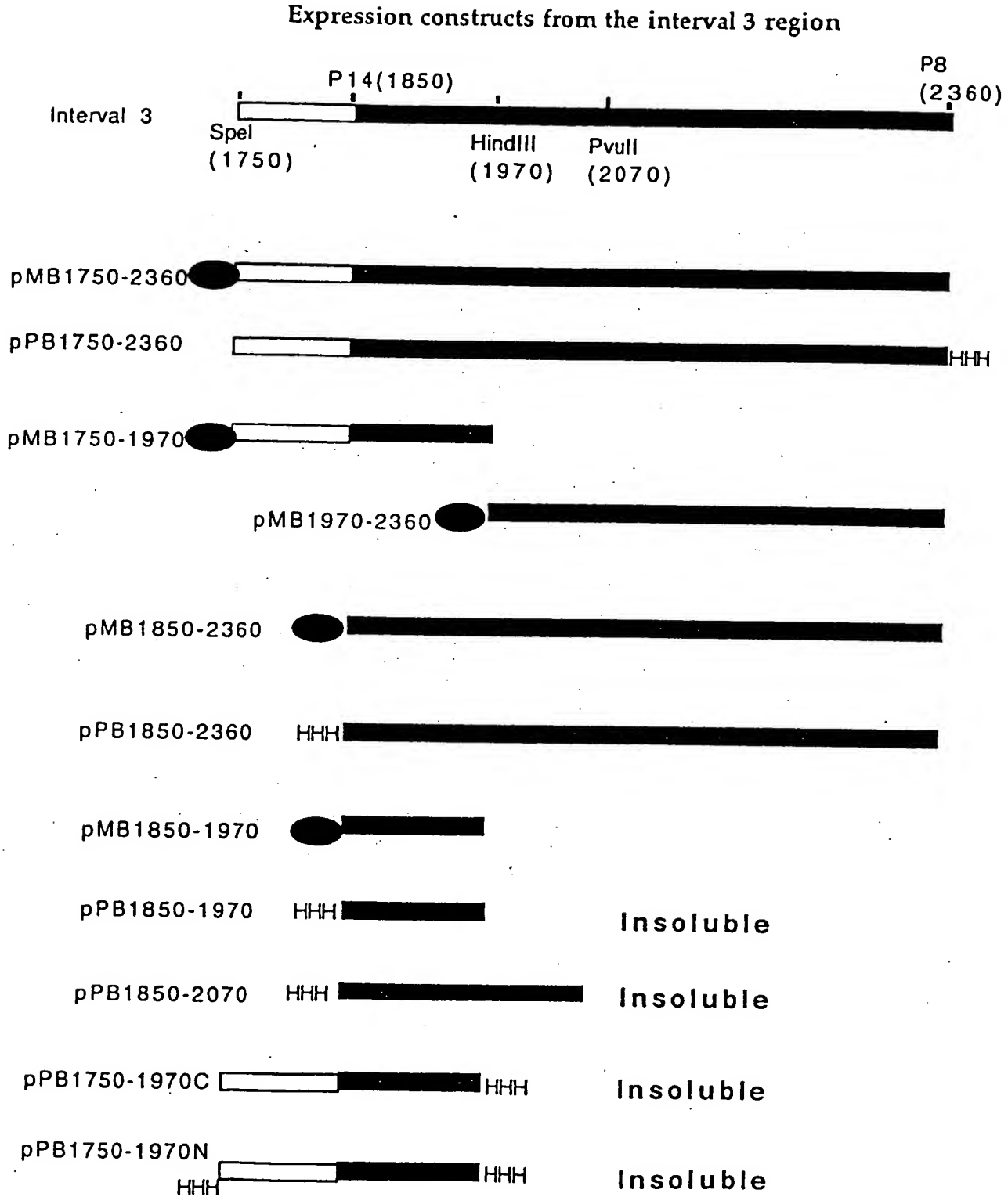

Expression constructs from the interval 3 region
Interval 3
P14(1850)
P8
(2360)
SpeI
(1750)
HindIII
(1970)
PvuII
(2070)
pMB1750-2360
pPB1750-2360
HHH
pMB1750-1970
pMB1970-2360
pMB1850-2360
pPB1850-2360
HHH
pMB1850-1970
pPB1850-1970
HHH
Insoluble
pPB1850-2070
HHH
Insoluble
pPB1750-1970C
HHH
Insoluble
pPB1750-1970N
HHH
HHH
Insoluble

FIGURE 21

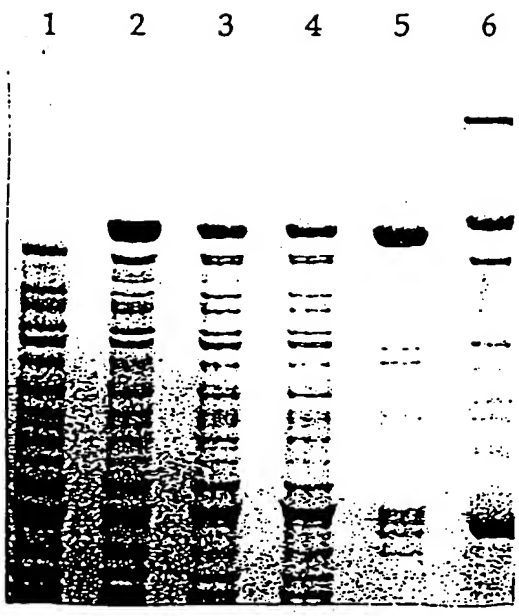


FIGURE 22

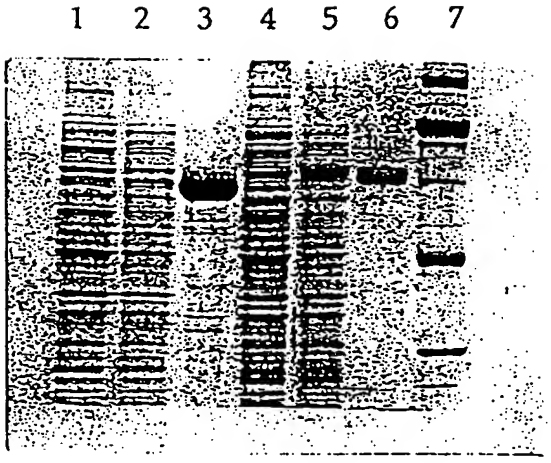


FIGURE 23

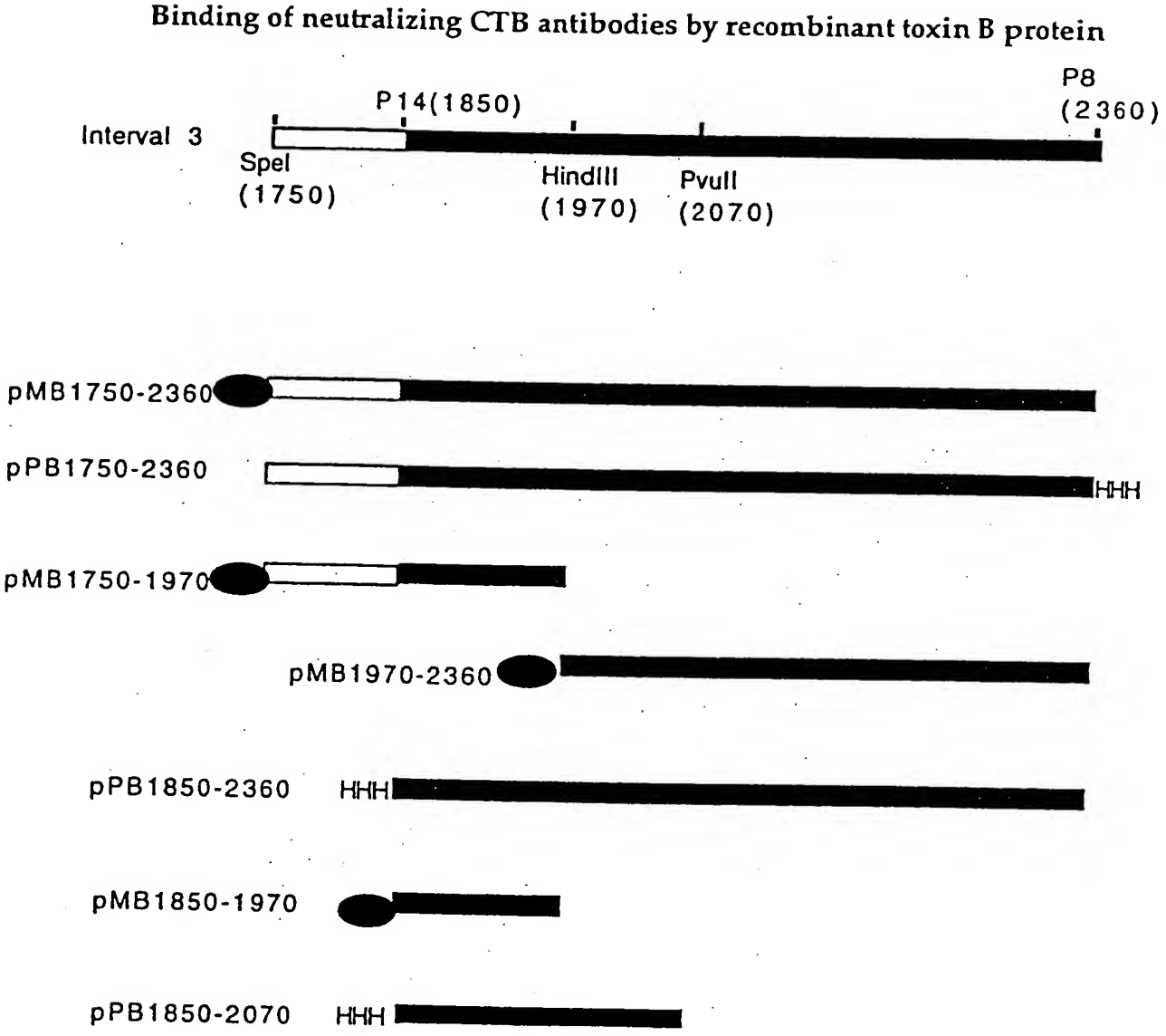

Binding of neutralizing CTB antibodies by recombinant toxin B protein
P14(1850)
P8
(2360)
Interval 3
SpeI
(1750)
HindIII
(1970)
PvuII
(2070)
pMB1750-2360
pPB1750-2360
HHH
pMB1750-1970
pMB1970-2360
pPB1850-2360
HHH
pMB1850-1970
pPB1850-2070
HHH

FIGURE 24

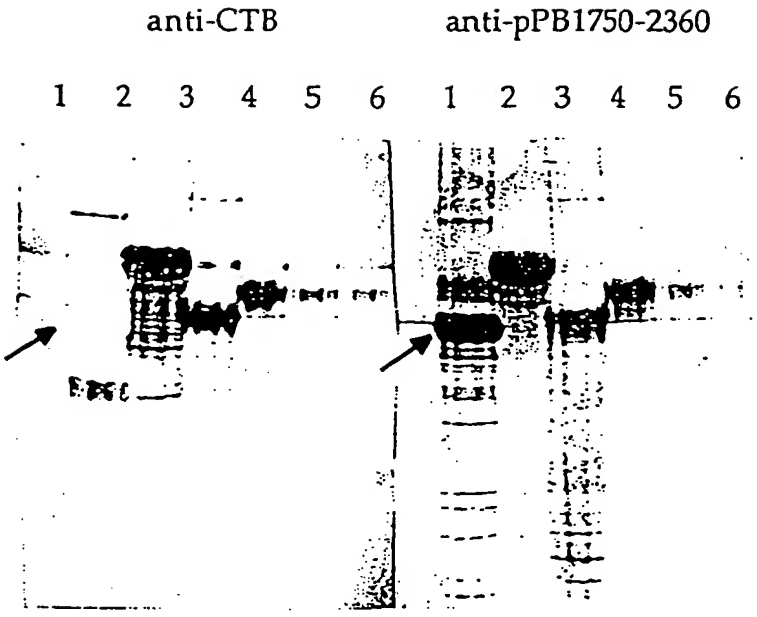


FIGURE 25

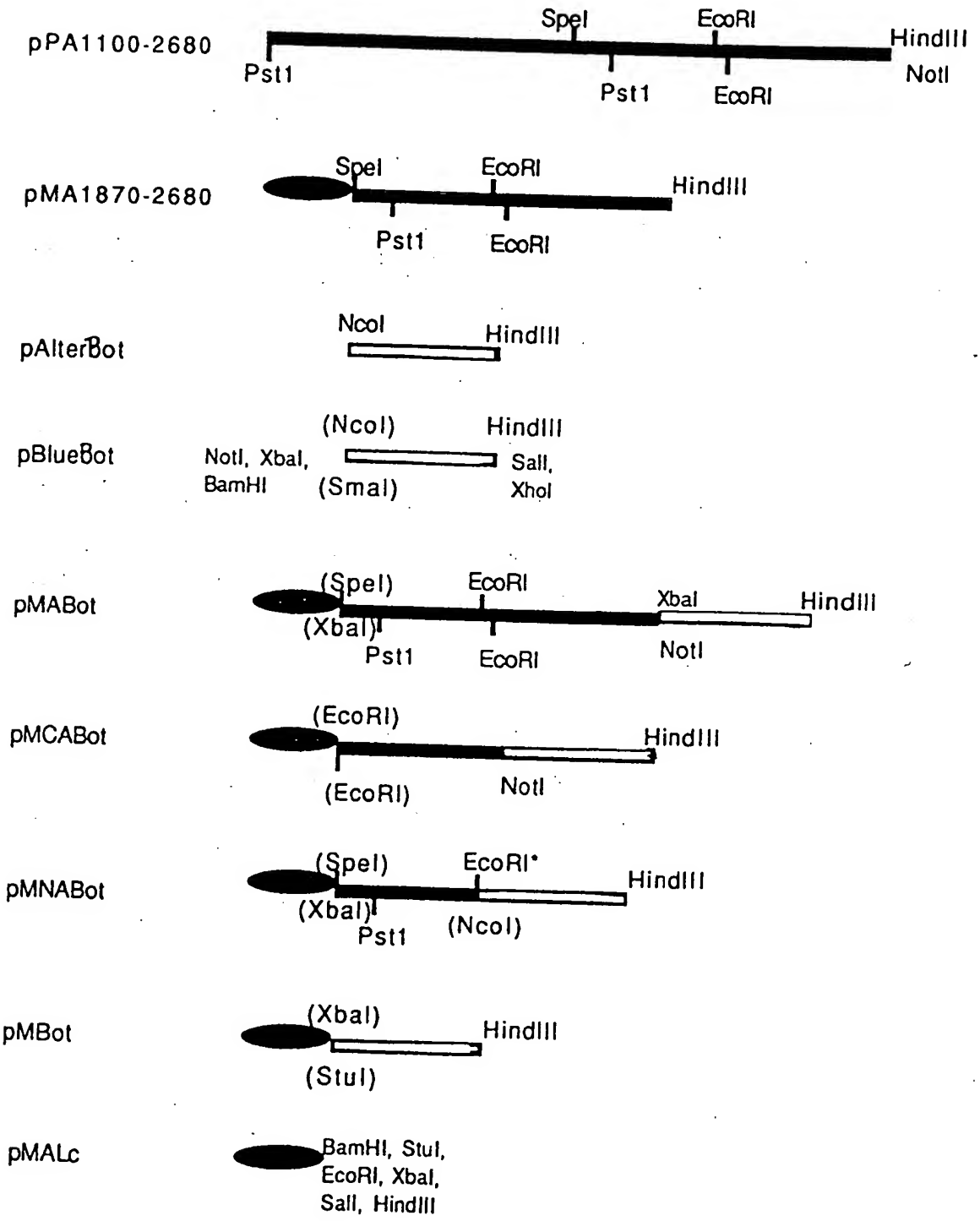

pPA1100-2680
SpeI
EcoRI
HindIII
Pst1
Pst1
EcoRI
NotI
pMA1870-2680
SpeI
EcoRI
HindIII
Pst1
EcoRI
pAlterBot
NcoI
HindIII
pBlueBot
(NcoI)
HindIII
NotI, XbaI, BamHI
(SmaI)
SalI, XhoI
pMABot
(SpeI)
EcoRI
XbaI
HindIII
(XbaI)
Pst1
EcoRI
NotI
pMCABot
(EcoRI)
HindIII
(EcoRI)
NotI
pMNABot
(SpeI)
EcoRI*
HindIII
(XbaI)
Pst1
(NcoI)
pMBot
(XbaI)
HindIII
(StuI)
pMALc
BamHI, StuI, EcoRI, XbaI, SalI, HindIII

FIGURE 26

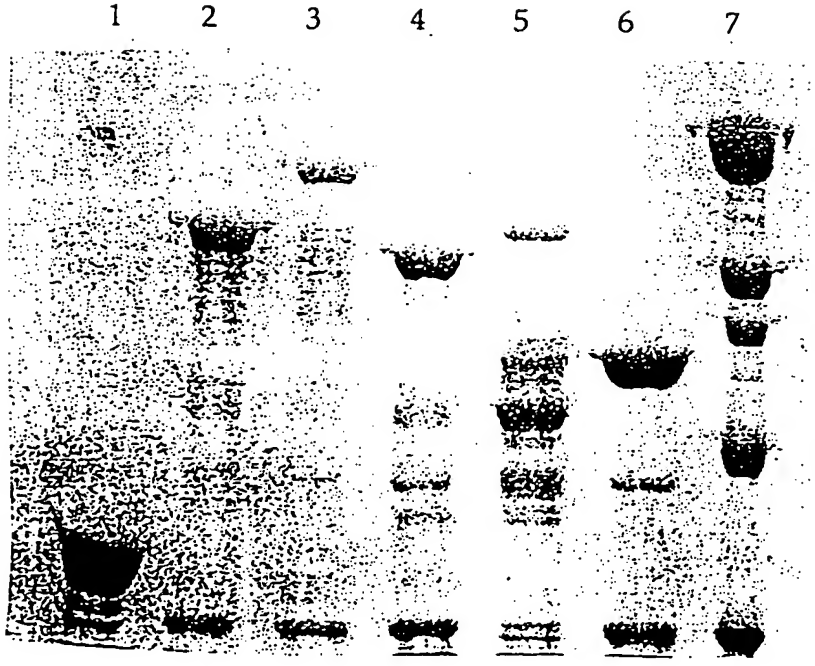


FIGURE 27

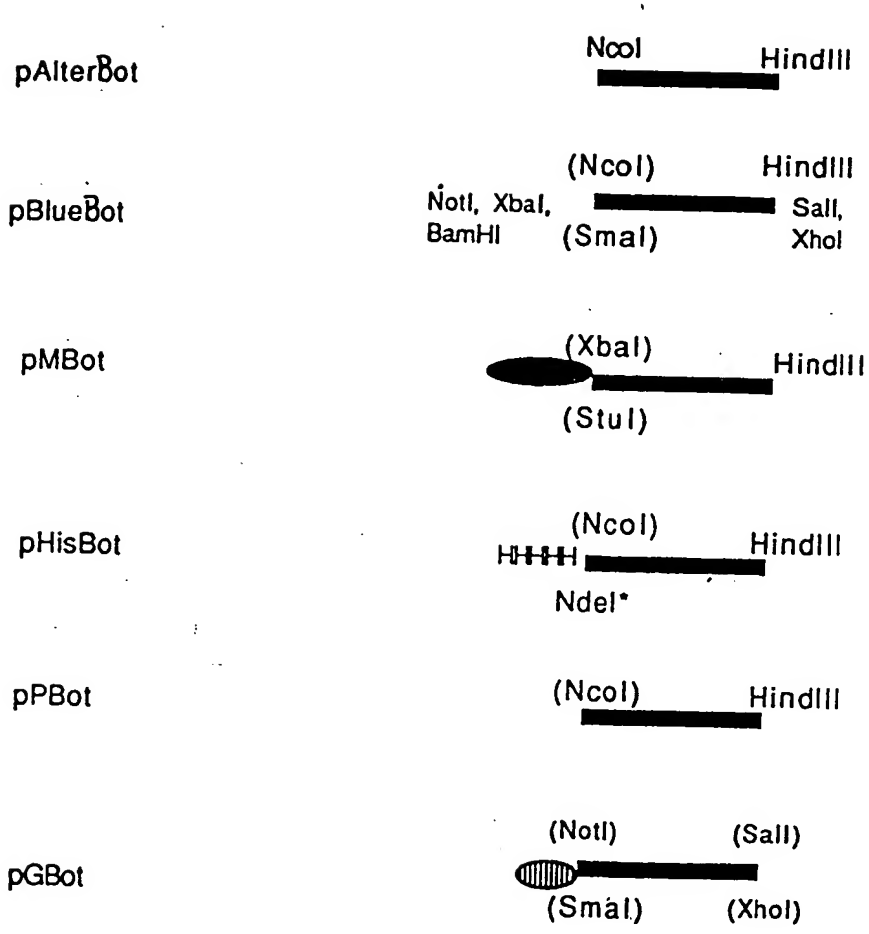

pAlterBot
NcoI
HindIII
pBlueBot
(NcoI)
HindIII
NotI, XbaI, BamHI
(SmaI)
SalI, XhoI
pMBot
(XbaI)
HindIII
(StuI)
pHisBot
(NcoI)
HindIII
NdeI*
pPBot
(NcoI)
HindIII
pGBot
(NotI)
(SalI)
(SmaI)
(XhoI)

FIGURE 28

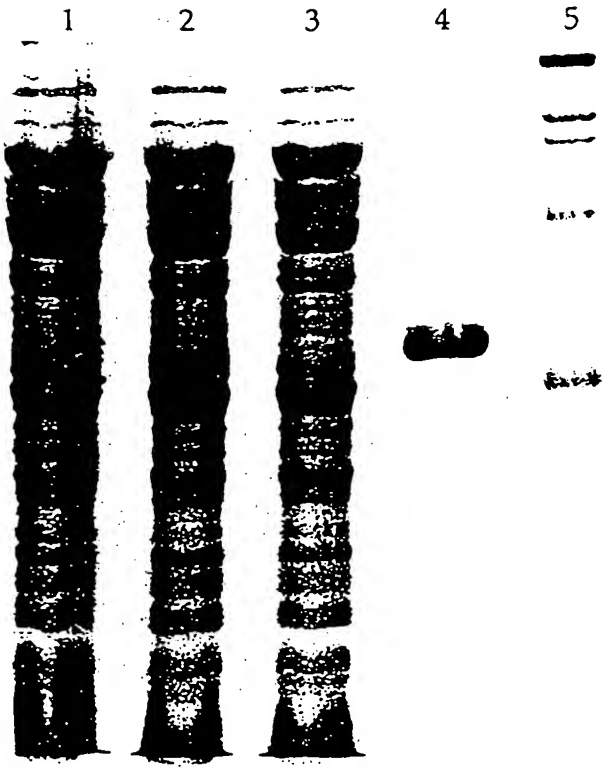


FIGURE 29

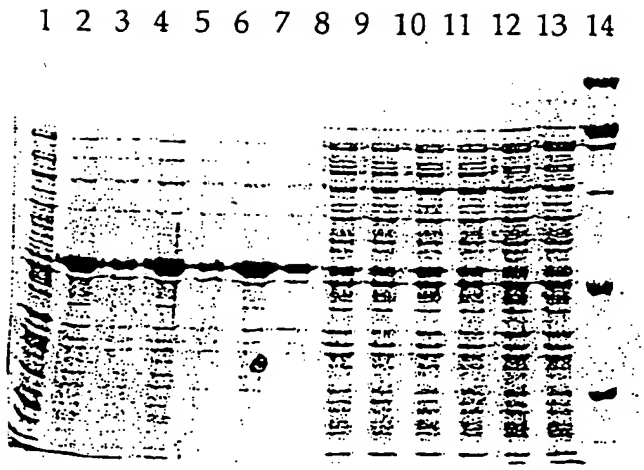


FIGURE 30

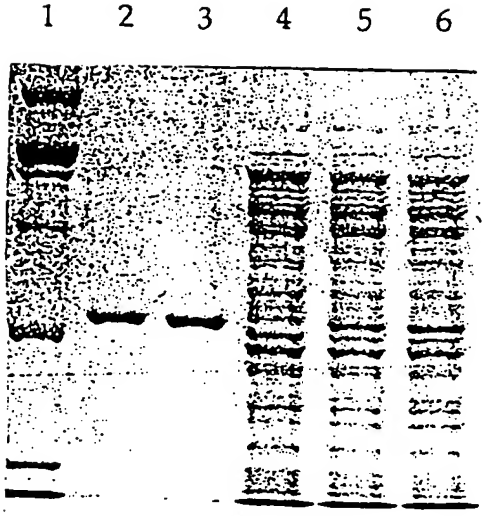


FIGURE 31

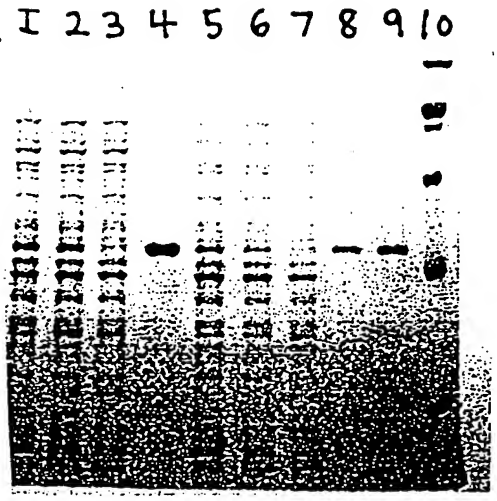


FIGURE 32

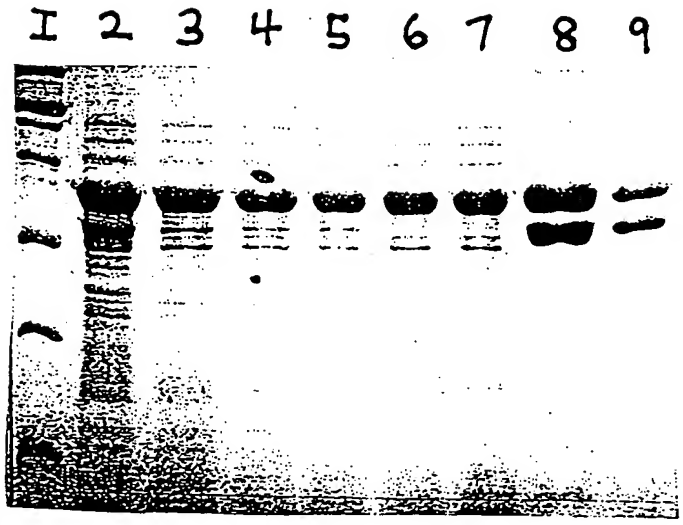


FIGURE 33

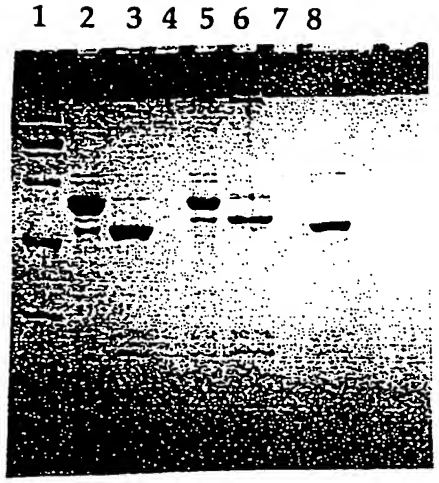


FIGURE 34

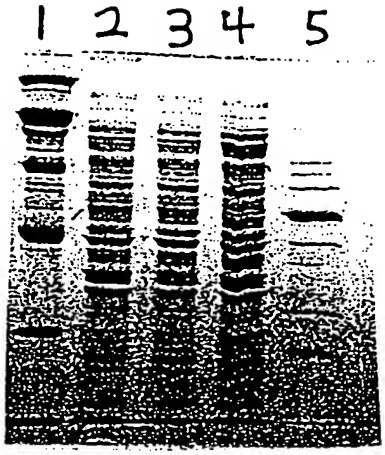


FIGURE 35

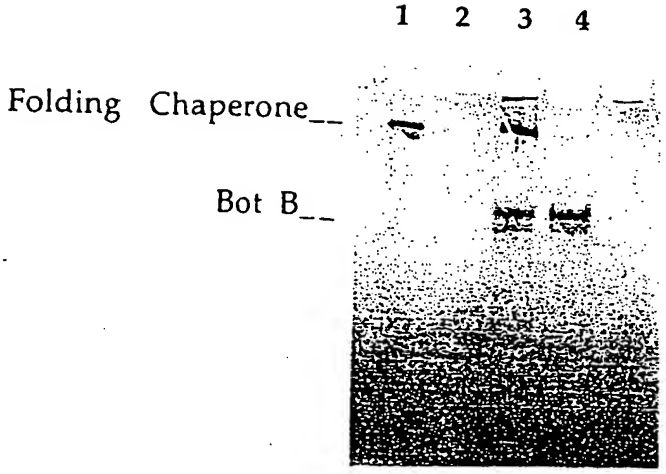


FIGURE 36

FIGURE 37

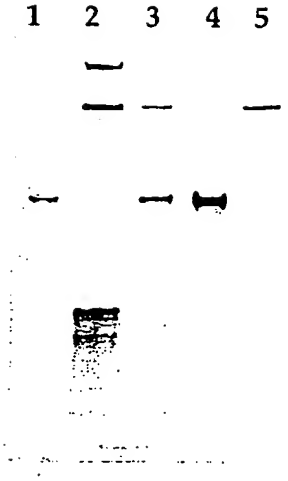


FIGURE 38

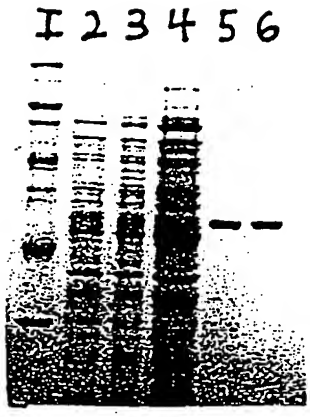


FIGURE 39

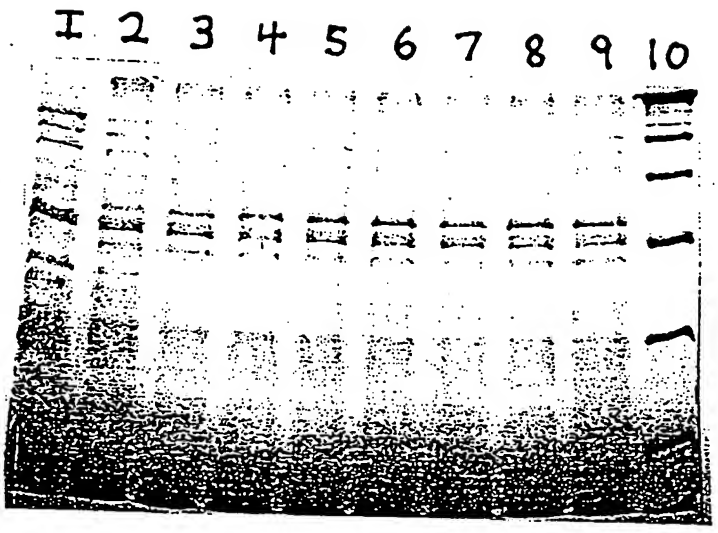
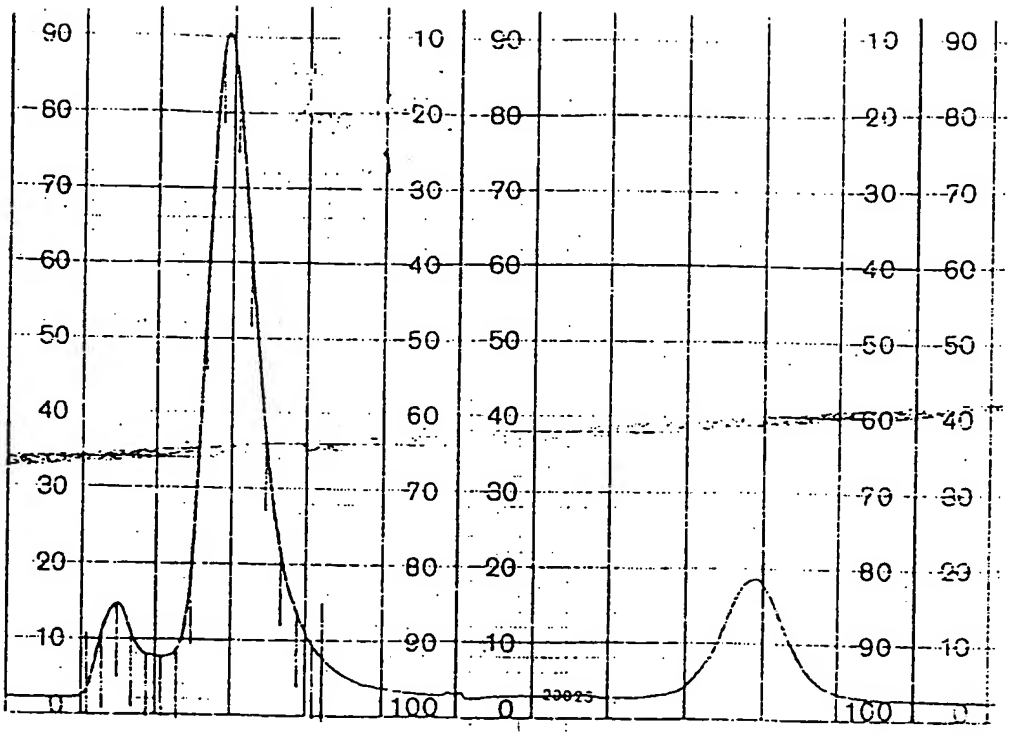


FIGURE 40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